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Studying physical and mental health status among Hijra, Kothi and Transgender community in Kolkata, India

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Abstract

Individuals with diverse sexual orientations and gender identities have historically experienced the major share of stigma, discrimination, and marginalization among all the LGTBIQ+ communities in India. Transgender, intersex, or queer individuals are deprived of their basic rights, self-dignity, bodily autonomy, and healthcare leading to significant negative health status. Recent legal reforms such as the decriminalization of Section 377 of the Indian Penal Code (prohibited same-sex activity) and amendments to the Transgender Persons (Protection of Rights) Bill may improve their health. In this context, the study has the following objectives: 1) to measure the physical and the mental health status of hijra, kothi, and transgender (HKT) individuals using the Short Form 12 (SF-12) questionnaire; 2) understand the variation in their health status by social determinants; and 3) identify spatial patterns of HKTs general, physical, and mental health. Data was collected using a Bengali version of SF-12 (N=98). We calculated physical (PCS) and mental (MCS) health composite scores and conducted the relevant statistical and spatial analysis. Findings revealed that HKT individuals had poor mental health (mean MCS = 42.3) compared to their physical health (mean PCS = 49.0). ANOVA tests showed statistically significant variation of PCS and MCS among HKTs by their age and income. Participants with both poor and good health conditions were evenly distributed in the study area, with no significant spatial clustering. This study was the first attempt to assess the health-related quality of life among the HKT individuals using SF-12, not previously adapted to gender-diverse communities in India. Results clearly indicate that there is a pressing need to address both physical and mental health among gender-diverse communities by not only improving awareness of their healthcare rights but by also removing social and structural barriers to health programs, increasing targeted health interventions, grassroots level activism, and government advocacy.

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Keywords

Hijra; Kothi; Transgender; mental health; physical health; SF-12 questionnaire; India

1. Introduction

Social and institutional stigma against lesbian, gay, bisexual, transgender, intersex and queer (LGBTIQ+) communities deny opportunities and impede their access to fundamental resources such as education, employment, and healthcare (White Hughto et al., 2015; Winter et al., 2016). Services within the health sector, ranging from regular health check-ups and information for mental health issues to complex hormonal therapies and sex-reassignment surgeries (SRS) for LGBTIQ+ patients, are fraught with discomfort and negative experiences (WPATH, 2012). Disparity in access to healthcare (Cruz, 2014), both perceived (Hswen et al., 2018) and actual incidents of discrimination by healthcare providers in hospitals (Lombardi, 2001), lack of trained physicians for treating LGBTIQ+ patients (Poteat et al., 2013; Balakrishnan, 2016), and limited data for understanding their unique health issues (Gupta et al., 2016), are among the many reasons contributing to negative health outcomes in these communities.

An early systematic review of literature indexed in MEDLINE (1980–1999) found that research emphasizing LGB health comprised only 0.1% of all the indexed articles (Boehmer, 2002). It was further noted that if research addressing transgender health was at its early stage then research addressing other gender-diverse communities was at its nascent stage (Harcourt, 2006). Fast forwarding to recent times, even though research on LGB health issues has increased significantly, research on trans-health is limited but evolving. Research has mostly been conducted within the framework of sexual health, focusing primarily on prevention and control of HIV/AIDS and more recently on SRS (Vaitses Fontanari et al., 2019); widely neglecting mental health issues (Winter et al., 2016a). Poor mental health outcomes such as depression lead to increasing substance use (Glynn and van den Berg, 2017), higher suicidal rates (Perez-Brumer et al., 2015; Virupaksha et al., 2016), and increasing risk of HIV transmission (Chakrapani et al., 2015). This affects overall quality of life. Yet, only recently few research studies have drawn our attention to the criticality of mental health status among LGBTIQ+ communities (Fredriksen-Goldsen et al., 2013; Winter et al., 2016b; Hughes, 2018) and explored the health-related quality of life (HRQoL) among transgender people undergoing hormonal therapies (Murad et al., 2010; Gorin-Lazard et al., 2012) and among youth with diverse gender identities (O'Bryan et al., 2018; O'Bryan et al., 2020). HRQoL is a multidimensional concept that includes physical, psychological, and social domains of health, and is generally accepted as an important overall measure of health status (Okonkwo et al., 2010; Obtel et al., 2013).

Another major roadblock for transgender health issues is defining *who is transgender.* Transgender people are a diverse group whose gender identity or gender expression differs from their sex assigned at birth and has a distinct place in the LGBTIQ+ continuum. Commonly used related terms in many discourses and literature such as trans-individuals/people, trans communities or trans health, however, encompass all non-binary gender

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identities (e.g. lesbian, gay, bi-sexual, transgender, queer, intersex, trans-sexual, cross dressers). Following suit, in this paper, we use the term transgender as a distinct gender identity but for brevity, we use the term 'trans' to refer to the various gender-diverse identities mentioned above. We found only one study that confirmed health disparities existed by fluid gender identities such as women who identify as 'exclusively lesbian', 'mostly lesbian', 'bisexual' and 'transgender woman', and that recognizing such diversities is important for developing targeted health programs and interventions (Lewis et al., 2019). This becomes an even more critical issue among trans communities in South Asia, where usage of the term 'transgender' varies by historical, cultural, and linguistic practices (Boehmer, 2002; Khanna, 2009; Ranade, 2015; Chhetri, 2017). Transgenders are known as *Meti* in Nepal (Oestreich, 2018), as *Ponnaya* in Sri Lanka (Nichols, 2010), and *Hijra* in India (Chhetri, 2017).

1.1 Gender identities and Health issues in India

British colonization had significant impact on making both post-colonial and modern-day India an unique space for non-binary gender communities in that they were historically recognized as distinct identities but were also facing severe discrimination and abuse, which among other issues, severely impacted their health conditions (Chakrapani et al., 2004). Due to cultural-linguistic differences, a variety of terms are used to describe people on a continuum of gender identities such as *Aravanis, Jananas, Kinnars, Hijra, Kothi, Dhurani, transgender* (Hall, 2005) or the *'third'* gender. *Hijra* is an Urdu word for both gender and cultural identities who are biologically male but express their gender identity through living as women (sometimes by SRS) and performing rituals such as dancing at weddings and blessings during child birth (Khanna, 2009; Nagar and DasGupta, 2015). A hijra is transgender but all transgenders are not hijras. *Kothi*, on the other hand, is a category for socioeconomically marginalized gender variant or 'feminine' same sex desiring males that gained visibility within the emerging institutional movement for LGBT rights in the late 1990s (Dutta, 2012). Gender identities also vary by geographic regions in India (Chakrapani et al., 2017); *Janana* is commonly used in Hyderabad and other cities of South India (Nagar, 2020), whereas *Dhurani* is a generic term used in Kolkata and cities of Eastern India for any LGTBIQ+ individuals soliciting sex work. Influenced by Western LGBTQ movements and the growing role of NGOs in shaping naming conventions and the funding that is available through them, many gender-diverse individuals began to use transgender in addition to local-cultural identity terms to attract NGO funding, particularly during the HIV/AIDS pandemic (Dutta, 2012).

Health of gender-diverse individuals is at a crisis point in India. Poverty induced prostitution (Ryan et al., 2019), negligence and discrimination in receiving services such as the SRS (Srivastava et al., 2020), lack of behavioral counselling and social support (Ranade, 2015), and discriminatory law and policing (Shaikh et al., 2016a) impact not only their HRQoL but also their physical and mental health (Chakrapani et al., 2004; Jose and V., 2014; Singh et al., 2014; Thompson et al., 2019; Srivastava et al., 2020). Two recent studies specifically focused on mental health recommended coping strategies when hijras undergo gender transitioning (Srivastava et al., 2020) and for other trans patients receiving HIV care (Thompson et al., 2019).

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On September 6th 2018, the Supreme Court of India ruled that the application of Section 377 of the Indian Penal Code to consensual homosexual activities between adults was *"unconstitutional, irrational, indefensible and manifestly arbitrary"* (Gupta, 2006). The Pehchan program, supported by Global Funds, focused on increasing access to health, social, and legal services in 18 states through community-based and peer-led social support systems that encouraged gender affirming empowerment (Chakrapani, 2010). The Transgender Persons (Protection of Rights) Bill, on the other hand, is controversial (Dharmadhikari, 2019). Although the bill prohibits discrimination against transgenders with regard to education, employment, and the ability to rent or buy property, it requires them to register with the government to be officially recognized. If a transgender person identifies as a trans man or a trans woman and wants to be legally recognized as such, they must submit a proof of SRS to the government (Sawant, 2017). The bill, according to many sexuality and gender rights researchers and activists, goes against the right to dignity and bodily autonomy, puts additional burden on their health costs, and forces them to go through painful and often corrupt bureaucratic processes (Singh and Singh, 2019). Favorable government advocacy is ongoing, but how much that will impact health conditions of the diverse gender communities is unexplored.

1.2 Present Study

The present study attempts to address a crucial gap in social and behavioral health research by understanding the HRQoL, including physical and mental health status, among different gender identities - *hijra, kothi, and transgender* – in urban India. This is part of a multiyear project titled SHAKTHI - *Studying Healthcare Accessibility among Kothi, Transgender, and Hijra Individuals.* SHAKTHI means 'power or force' in Sanskrit language. SHAKTHI is the first research project, based on survey data, that addresses health issues while acknowledging the existence of non-normative gender identities in India (see Section 2.3 for details). During the pilot phase of SHAKTHI, study participants did not prefer to use 'transgender' as an umbrella term and self-identified themselves as either a hijra, kothi, transgender (HKT), or with overlapping identities. Discussions with key informants and community leaders revealed that discrimination and continuous oppression are adversely affecting their health conditions, and that there is a pressing need for measuring their physical and mental health status to seek appropriate medical interventions. Such insights from fieldwork shaped the scope of this present study.

To the best of our knowledge, this study is a first attempt to assess the HRQoL of gender-diverse communities in India using the Short Form 12 (SF-12) measure. SF-12 measure is a widely accepted, standardized and self-reported instrument assessing the impact of health on an individual's everyday life and is often used as a quality of life measure (Ware et al., 1996; Gandek et al., 1998) (see Section 2.2 for more details). It is adapted and available across nations and cultures (Gandek et al., 1998) such as Greece (Kontodimopoulos et al., 2007), Taiwan (Tseng et al., 2003), Korea (Kim et al., 2014), Iran (Montazeri et al., 2009), Australia (Sanderson and Andrews, 2002), Bangladesh (Islam et al., 2017), Netherlands (Mols et al., 2009), China (Lam et,al., 2005), and India (Sinha et al., 2013; Wind et al., 2013; Malamardi et al., 2015; Pati et al., 2016; Islam et al., 2017), but has not been used for

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gender-diverse populations. The study has the following three primary objectives and one secondary objective:

Primary objectives:

1. To measure physical and mental health status of HKT individuals using the SF-12 questionnaire;
2. To understand the variation in physical and mental health status by social determinants;
3. To identify spatial patterns of their general, physical, and mental health;

Secondary objective:

4. To assess the adaptation of SF-12 questionnaire among the HKT community.

2. Methodology

2.1. Study Area

The city of Kolkata was selected as the study area for the following reasons: 1) Kolkata is one of the most densely populated cosmopolitan cities of India where discrimination and stigma towards the vulnerable HKT community are magnified due to population density, migratory population, social and economic inequalities, and disproportionate access to resources. The city, however, has also recently witnessed heightened awareness, sensitivity, and NGO based movements (Samabhabona, Pratay Gender trust, SAPPHO for equality) for the LGTBIQ+ communities; 2) To the best of our knowledge, there is no prior research conducted to assess physical and mental health issues of the HKT community in Kolkata; and 3) The authors have the advantages of being fluent in speaking and writing in Bengali, the local language of Kolkata, and familiarity with the social, cultural, and economic milieu of the city; and 4) The authors' prior involvement with the trans community for a pilot project.

2.2. Study Participants

The eligibility criteria for study participants are as follows: 1) individuals who self-identified themselves as a hijra, kothi, transgender, or a dhurani (see Section 1.1 for the explanation of these identities); 2) 18 years or older; 3) living in Kolkata and within 2-miles of the city boundary; and 4) able to provide consent for the procedures of the study. The sample size for the pilot phase was 12 and the target enrolment for the study was 100 participants. A total of 98 participants (98%) were interviewed for this study.

Participants were recruited by a combination of targeted advertising, word of mouth, and snowball sampling techniques. Such sampling techniques may increase the selection bias in research (Meyer, 1995; Harcourt, 2006), however such techniques are also well suited for reaching hard to reach populations like the HKT community of Kolkata. Advertisements and flyers about the project were posted on social media, community-based WhatsApp and Facebook groups, at LGBTIQ+ themed cafes, and distributed among community leaders.

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2.3 Research Design

Data collection—Project SHAKTHI collected data using a semi-structured survey divided into sections on demographics, SF-12, and questions on awareness, accessibility, and utilization of general health and transgender-specific health facilities. Data was collected for three months, May-July in 2019. On average, the length of the survey was 60 minutes. After obtaining signed consent from eligible participants, surveys were administrated by one of the authors at sites where they felt safe and comfortable. The surveys were built in Qualtrics^{XM} (Provo, Utah) and conducted using an android tablet. The study is approved (#H19–082) by the University of Connecticut's Institutional Review board. For the present study, we used data on participants' demographics and their health assessments via SF-12 measures.

Short Form 12 (SF-12) measure—The most commonly used measures for HRQoL are SF-36 (36 questions) and its abridged version, SF-12 (12 questions) (Ware et al., 1998; Gandek et al., 1998; Hughes, 2018). SF-12 comprises 12 questions that produce two composite scores: one for physical health (PCS) and one for mental health (MCS). The higher the composite score, the better the HRQoL. The instrument also includes a general health item (*'In general, would you say your health is. . .'*) measured on a five-point Likert scale ranging from poor to excellent. The SF-12 has well-established validity and reliability, including high-level correlation with the respective components of the larger SF-36 on which it is based. It can be completed by most participants in less than a third of the usual time needed to complete the SF-36, considerably reducing the burden and fatigue placed on participants (Ware et al., 1996; Ware et al., 1998). In prior studies, SF-12 measure was translated verbatim into Indian languages (Sinha et al., 2013; Pati et al., 2016) and also into Bengali (Islam et al., 2017). This is the first study which attempted to modify the questions in SF-12 using adequate examples from HKT individuals' everyday life. Table 1 shows only the original questions which were modified. Details on the response rate, reliability, and validity of the adapted measure is reported and discussed in the Results and the Discussion sections respectively.

2.4 Data Analysis

PCS and MCS scores—We calculated the PCS and the MCS scores using QualityMetric Health Outcomes Scoring Software 4.0 (QualityMetric Incorporated, Lincoln, RI, USA). All 12 questions were used to calculate PCS and MCS scores by applying a scoring algorithm empirically derived from the US general population (Ware et al., 1995). The scores ranged from 0 (worst health) to 100 (best health), with a mean close to 50.0 and a standard deviation (SD) close to 10.0 (Saris-Baglama et al., 2004). A question that often arises is whether US-derived scoring algorithms are appropriate for scoring the SF-12 measures in other countries. A comparative analysis of scores across nine countries (Gandek et al., 1998) and studies based in India (Pati et al., 2016; Wiedemann et al., 2018) concluded that there was little difference in the scores when country-specific scoring algorithms were used, and that using standard (US-derived) scoring measures allowed comparisons of scores across countries and populations.

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Statistical Analyses—The social determinants included in the analysis were self-identified gender identities (Hijra, Kothi, Transgender, and more than one gender identities), educational qualification (non-literate to college education and above), relationship status (single, married, and with multiple partners), age (18– 29, 30–39, >=40 years), employment type (unemployed, employed including self-employed and informal sex-work, and traditional jobs for HKT communities - *cholla, logon, badhai*), and monthly income in Indian Rupee (INR) (<=5000, 5001– 7500, 7501–10,000, 10,001–20,000, 20,000–50,000, >= 50,000). For the employment type, *cholla* is a community word for begging on streets, at traffic signals, and in local trains; *logon* is performing dances at marriage parties for entertainment, and *badhai* is the ritual for felicitation during opening ceremonies of businesses and offering blessings at childbirth. We conducted a one-way analysis of variance (ANOVA) test to determine whether the means of the PCS and the MCS scores varied statistically across the categories of these social determinants (Kaufmann and Schering, 2007b; Hughes, 2018). When statistically significant differences were found, a post hoc test, Least Significant Difference (LSD) was performed to identify which categories significantly differed from the others at a 95% confidence interval (p-value = 0.05). LSD assesses the degree to which marginal and cell means are different. The test is similar to t-test as it creates a pooled SD across groups rather than generating a weighted SD as used in the independent groups t-test. The advantage of this procedure is an increased power for the LSD test when compared to the standard t-test (Allen, 2017).

The adaptation of SF-12 measure for the HKT sample was validated by examining the psychometric properties. Construct validity of the SF-12 was conducted by examining the association between the scores (PCS and MCS) and the 12 questions (Ware et al., 1995) using the Pearson's Product Moment Correlations. It is expected that those questions that are conceptually related to PCS (or MCS) would have high correlations (Pearson's $r > 0.40$). Conversely, unrelated questions are expected to exhibit lower correlations (Pearson's $r < 0.40$). This is known as convergent validity. The correlation between the PCS and the MCS scores will test the discriminant validity, i.e. whether two conceptually unrelated scores are also statistically unrelated. Finally, Cronbach's alpha was used to measure the reliability of the measure (Obtel et al., 2013).

Spatial Analysis—The self-reported home addresses of the participants were geocoded. Geocoding is the process of converting addresses into geographic coordinates used to place markers on a map. We ensured confidentiality of our study participants using geographic masking by the random perturbation within a circle method. Geographic masking is the process of altering the coordinates of point location data to limit the risk of reidentification on maps (Armstrong et al., 1999), and is popularly used by health researchers that use individual-level data (Zandbergen, 2014). A proportional dot map was used to show the spatial distribution of self-reported general health including five categories: excellent, very good, good, fair, and poor. The individual PCS and MCS score were aggregated at the ward level, the smallest unit of administration in India. Kolkata is divided into 144 wards. Choropleth maps were then created at the ward level for identifying the spatial patterns of the PCS and the MCS scores. All spatial analyses and maps were prepared using ArcGIS 10.7.1 (Redland, CA)

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3. Results

3.1. Demographics

Participants mostly identified themselves as kothis (40.8%), transgenders (13.3%), hijras (11.2%), or with multiple gender identities including dhurani (34.7%) (Table 2). In terms of educational qualification, 10.2% participants were non-literate, 36.7% had education up to a secondary level (10–12 years of education from primary to 10th standard), 23.5% had a higher secondary degree (12–14 years of education from primary to 12th standard), and 29.6% had a bachelor's degree or higher. The HKT participants were predominantly single (single, never married, or divorced) (29.6%) or had multiple partners (42.9%). A quarter of participants also indicated that their relationship status was complicated, i.e. they were married to someone (based on their sex at birth) due to family pressure but had extra-marital relationships (based on their gender identity).

Study participants were mainly younger adults, with 44.9% between 18–29 years and 37.8% between 30–39 years. Only 17.3% participants were above 40 years. The occupation of the HKT community is unique. Even though 47.0% were employed at NGOs as outreach officers for targeted intervention programs (e.g. National AIDS Control Programs) and as hospital ward guards, 4.4% still earned money from sex-work, and 35.7% were involved with traditional occupations associated with the hijra culture such as cholla (21.1%), logon (12.2%), and badhai (6.7%) (Definitions of these culturally rooted traditional occupations are explained in Section 2.4). The majority of participants (35.7%) were in the medium income category with an average monthly income between 10,001 – 20,000 INR ($145 - $290), followed by 23.5% in the very low-income category with less than 5000 INR ($75). Only 3.1% earned above 50,000 INR ($725) per month. The income status of our study sample resonated with Kolkata's chronic poverty, with 80% of its population earning less than 5000 INR ($75) monthly (Sengupta, 2010; Haque et al., 2020).

3.2 Self-reported general health and PCS and MCS scores

Of the 98 HKT individuals, a majority (42.9%) reported having an overall good health, followed by very good (34.7%) and excellent (15.3%) health status (Figure 1(A)). Only 8% of participants reported that their overall health conditions were either fair or poor. Although participants with good to excellent health conditions did not show any significant spatial pattern in the study area, participants with fair health conditions lived in the north-central and northern neighborhoods, and participants with the worst (poor category) health status lived in some of the peripheral southern neighborhoods of the city (Figure 1(B)).

The means of the PCS and the MCS scores for the study sample were 49.0 (SD = 9.35) and 42.3 (SD = 13.35) respectively on a scale from 0 to 100. Scores below 50.0 are considered undesirable (Wind et al., 2013) and may require medical attention. The means of both scores being below 50.0 were in direct contrast to their self-reported overall health condition, where approximately 92% reported their health status being from good to excellent conditions. Further, Pearson's correlation co-efficient indicated a statistically significant (p-value < 0.05) negative correlation between the self-reported general health and the PCS (−0.6) and MCS (−0.3) scores.

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3.3. Social determinants and PCS and MCS scores

The ANOVA test indicated that the means of the PCS and MCS the scores varied by monthly income (p-value = 0.047) and age (p-value = 0.038) (Table 3). In other words, among all the social determinants, age and income explained the variation of the sample's physical and mental health conditions. The post-hoc LSD test revealed that the mean PCS score of the participants who had monthly income of above 50,000 INR were higher than the means for participants belonging to other income categories (Table 4). Similarly, participants in the age category of 30–39 years showed statistically significant higher mean MCS scores compared to the participants in other age-categories (Table 4).

3.4. Spatial analysis of PCS and MCS scores

Figure 2 shows the spatial distributions of the PCS and the MCS scores. Participants from only two wards located in the extreme south and southeast Kolkata had critically low PCS scores of below 30.0. Participants with PCS scores between 30.1 to 50.0 and above 50.0 lived in wards with no distinct spatial clusters. On the other hand, we see some spatial patterns from the MCS scores. The northern part of the city had participants with lower MCS scores (below 50.0) than the southern part of the city. Although boundaries and differences are blurring, the socioeconomic and, more importantly, cultural differences between the northern and the southern neighborhoods of the city are rooted in history. *Black Town*, or the Old/North Kolkata, home to deprived laborers, middle class indigenous people, and old landed gentry or *zamindars*, is overpopulated with low socioeconomic status, poor housing quality, slum dwelling, and Asia's largest red-light district, *Sonagachi*. In contrast, the *White Town* (Central-South Kolkata) is occupied by the ruling elites and rich immigrants (domestic and international) with better housing and urban amenities built on the foundations from the colonial period (Banerjee and Guha, 1997; Sengupta, 2010; Haque, 2016; Haque et al., 2020).

There were 9 wards (10%) where participants had MCS scores less than 30.0. The 105th Ward located in the area of Haltu and Garfa in southern Kolkata had both critically low PCS (26.9) and MCS (15.9) scores. This and the surrounding wards, developed primarily from a refugee colony, are now located at the periphery of the affluent southern neighborhoods with high inequality in terms of income, education, and access to amenities (Haque et al., 2020). Special and immediate attention needs to be paid to the health conditions of HKT community members in this ward. Comparing both scores, HKT individuals' mental health status were in more critical condition than their physical health status.

3.5. Adaptation of SF-12 measure among HKT community

Table 1 shows the modifications to the existing SF-12 questionnaire that were adapted for the HKT community of Kolkata. Successful adaptation was confirmed by several results. First, there were no missing data, i.e. the response rate was 100%. Second, the correlations of the individual questions with both the PCS and the MCS scores showed convergent and discriminant validities. The questions pertaining to the physical health domain correlated higher with the PCS score (e.g. Q2 has a correlation of 0.701 with PCS score at 95% significance level), whereas those pertaining to the mental health domain (Q7-Q12) correlated better with the MCS score (Table 5). This shows a successful convergent validity.

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Similarly, questions in the mental health domain had lower correlation with the PCS scores and vice versa. Third, that the PCS and MCS scores measured different health domains was confirmed by a very low correlation co-efficient of 0.137 ($p < 0.05$) between the scores.

4. Discussion

This study had three primary objectives: to measure the physical and mental health status of HKT individuals using SF-12 measure; to understand the variation in health status by social determinants; and to identify spatial patterns of participants' health conditions based on their home location.

Among the plethora of gender identities that exist in India, the study participants from Kolkata predominantly identified themselves as transgender, hijra, or kothi. Interestingly, a quarter of the study sample also identified themselves by more than one identity, i.e. both as a kothi and a transgender. This is in line with growing arguments in *transgender geography* emphasizing that gender identities are fluid and not limited to binary categories (Khanna, 2009; Dutta and Roy, 2014). This also explains why gender and human rights researchers and activists find the Transgender Persons Bill against the right to dignity and bodily autonomy of trans-individuals.

The adult community members with higher educational status were employed in white collar jobs such as at NGOs and government departments with a decent monthly income to avail a good standard of living in Kolkata. However, there was still a significant proportion of HKT individuals engaged in traditional means (logon, cholla, and badhai) of earning money. Such occupations are not only physically and mentally strenuous, but both logon and cholla can negatively impact sexual health. Some study participants narrated that while cholla (begging on streets and trains) they were often sexually abused, and logon activities (profession of singing and dancing at weddings) sometimes led to prostitution. Without inclusion of trans-individuals in other types of employment opportunities, traditional means of earning will remain dominant by default due to lack of choices.

While over 90% of the participants self-reported having an average to excellent overall health condition, calculated PCS and MCS scores told a different story. Based upon non-participant observations and informal discussions with participants, the authors speculate that the community members were in denial, believing that they were healthy even when in reality their clinical health indicators were critical. This is an example of 'denial' as a coping mechanism. A prolonged state of denial, however, can interfere with HRQoL and the ability to tackle challenges (Feinstein et al., 2017; Bowling et al., 2019; Rinehart et al., 2019).

A comparison of the mean PCS score of the HKTs with other studies conducted in India showed that HKT individuals had marginally better physical health (PCS $\mu = 49.0$) compared to heterosexual men and woman with food addiction (PCS $\mu = 45.8$) (Wiedemann et al., 2018), bank employees in Karnataka (PCS $\mu = 47.9$) (Malamardi et al., 2015), individuals with multi-morbidity (PCS $\mu = 43.2$) (Pati et al., 2016) and flood effected communities (PCS $\mu = 33.5$) (Wind et al., 2013). HKT individuals from our sample reported poorer mental health (MCS $\mu = 42.3$) compared to all the above-mentioned study populations. Clearly,

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much more needs be done to improve both the physical and the mental health of the HKT community.

Discordance between gender identity and natal role (Hall, 2005), coming to terms with their own sexual identity and orientation, poor social acceptance from an early age (Kumari, 2019), traumatic experiences during transition to a desired gender, physical, verbal, and sexual abuse from family, peers, teachers (Misra, 2009), and fear from law-enforcement (Nagar and DasGupta, 2015) were some of the plausible historical and sociocultural stressors for poor physical and mental health among community members (Jayadeva, 2017). Recent studies have also reported lack of social support, loneliness, perceived discrimination from everyday lived experiences, and low rates of coping strategies as important factors for poor mental health (Sadiq and Bashir, 2014). Along with this, the current rigid and inflexible healthcare system and laws such as the Section 377, which has only very recently been decriminalized, are also responsible for poor health outcomes among trans communities (Singh, 2016). These issues resulted in self-negligence and lack of awareness not only among community members but also led to limited training of healthcare professionals on addressing mentally ill trans patients. This study, therefore, makes a significant contribution to the evidenced based literature of trans-health by focusing more on health-related quality of life, which had not previously been addressed in the context of an urban megalopolis of India.

Not all social determinants were able to explain the variations in PCS and MCS scores. The study found that health assessments of HKT individuals did not vary by their diverse gender identities and almost everybody experienced poor mental and physical health conditions. Age and income, on the other hand, did explain some variation in the PCS and the MCS scores. Results revealed that the scores of participants in the age group 30–39 years differed significantly from participants in other age groups. In the context of the study location's social and cultural mosaics, HKT participants belonging to this age group are typically working, sometimes the only earning member of the family, and may be more emotionally stable than younger and older adults or perhaps have better self-coping strategies. For a marginalized group such the as the HKT, income will always be one of the strongest social determinants of health. It was clearly observed from this study that the health status of community members with incomes higher than 50,000 INR differed significantly from members belonging to other income groups. Based upon observations made during data collection, participants who were in this income group were also the ones who underwent successful SRS and could afford hormonal medication and the much-needed behavioral counselling that followed.

Apart from a subtle spatial variation of participants from the northern part of the city exhibiting lower MCS scores than the participants living in the southern part, no other spatial clusters of either high or low PCS or MCS scores were found in the study area. This can be explained by the following reasons. First, the poor physical and mental health conditions of community members were widespread. Second, kothi and transgender individuals (the majority of our study sample) tended to live alone, distributed throughout the city, and therefore chances of identifying any spatial clusters were low.

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Even though adapting and validating SF-12 measure (secondary objective) among a specific vulnerable community was one of the challenges of this study, the results indicated that the adaptation was a success. One of the author's prior knowledge of *Hijra Farsi* (Awan and Sheeraz, 2011) (popularly known as the *Ulti Bhasa* in Bengali) was useful in translation, rephrasing few questions, and providing examples specific to HKTs' lifestyle for preparing an appropriate set of SF-12 questions for our study sample. Translation was necessary to ensure a 100% response rate. Based on the successful convergent and discriminant validities, we conclude that SF-12 is a valid measure for assessing the physical and mental health status of HKT individuals.

4.1. Limitations

This study had few limitations. First, our study was based on self-reported data from a sample size of 98 participants. We cannot definitively say that the sample was representative of the entire HKT community in the city. However, when we conducted a *feedback* session with the community (activists, leaders, and general members) to discuss our preliminary results from this study and the larger SHAKTHI project, we received strong confirmation of our findings. The details from the feedback session are not within the scope of the current paper but will be detailed in future research emanating from the larger project. Second, spatial analysis did not find any strong patterns of participants with either good or poor health conditions. It is possible that this is due to the size and composition of this particular sample and might differ with more data. In addition, a small sample size might also introduce biases in the statistical analysis, however, as mentioned above, our study findings were validated by the community experts. Third, although the Cronbach reliability test had a lower than expected value of 0.5, this is sometimes possible with fewer than 20 questions, as was the case for SF-12 (Dall'Oglio et al., 2010). Other psychometric measures such as convergent and discriminant validities indicated that SF-12 was generally appropriate as a measure of physical and mental health status for HKT communities (Chum et al., 2016).

5. Conclusion

This study made significant contributions to the literature of health status among gender-diverse individuals in India. We addressed a crucial research gap by measuring and understanding the health-related quality of life among *hijra, kothi, and transgenders* in urban India. The most important finding was that these communities, irrespective of their gender identities, had widespread mental health issues at a critical clinical level. Poor mental health outcomes such as chronic depression (Glynn and van den Berg, 2017), suicidal thoughts, and feelings of hopelessness (Perez-Brumer et al., 2015; Virupaksha et al., 2016) will lead to further debilitating physical health, addiction, alcoholism, risk of sexually transmitted infections, and HIV transmission (Chakrapani et al., 2015). This finding also resonated with the concern and appeal of the trans communities of Kolkata to provide immediate support for their growing unmet healthcare needs. The time is now for researchers and activists to contribute to the evidence base for increasing awareness of trans-health rights, improving access to healthcare facilities, targeted intervention for mental health issues, and reducing stigma and discrimination. In the past, health interventions of the Pehchan program had been successful in fighting HIV among the community members (Shaikh et al., 2016b). Similarly,

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we are hopeful that empowerment and rights-based approaches for improving mental health will also be a success. Future studies from the SHAKTHI project will follow suit in this effort. First, we are looking at the impact of recent legal reforms on LGBTIQ+ health rights based on the substantive human-rights framework and second, we are identifying facilitators and barriers to both general and trans-specific healthcare facilities among LGBTIQ+ communities in urban India. In conclusion, we advocate the need for more research on trans-health and, more importantly, for a trans-friendly society.

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Highlights

- Gender-diverse communities in urban India have poor health-related quality of life
- Hijra, kothi and transgender individuals have low physical and mental health status
- Mental health is at a crisis level and needs targeted interventions
- Crisis of mental health does not vary by nuanced gender identities, it is widespread
- Low income, young and old hijra, kothi and transgender individuals are most vulnerable

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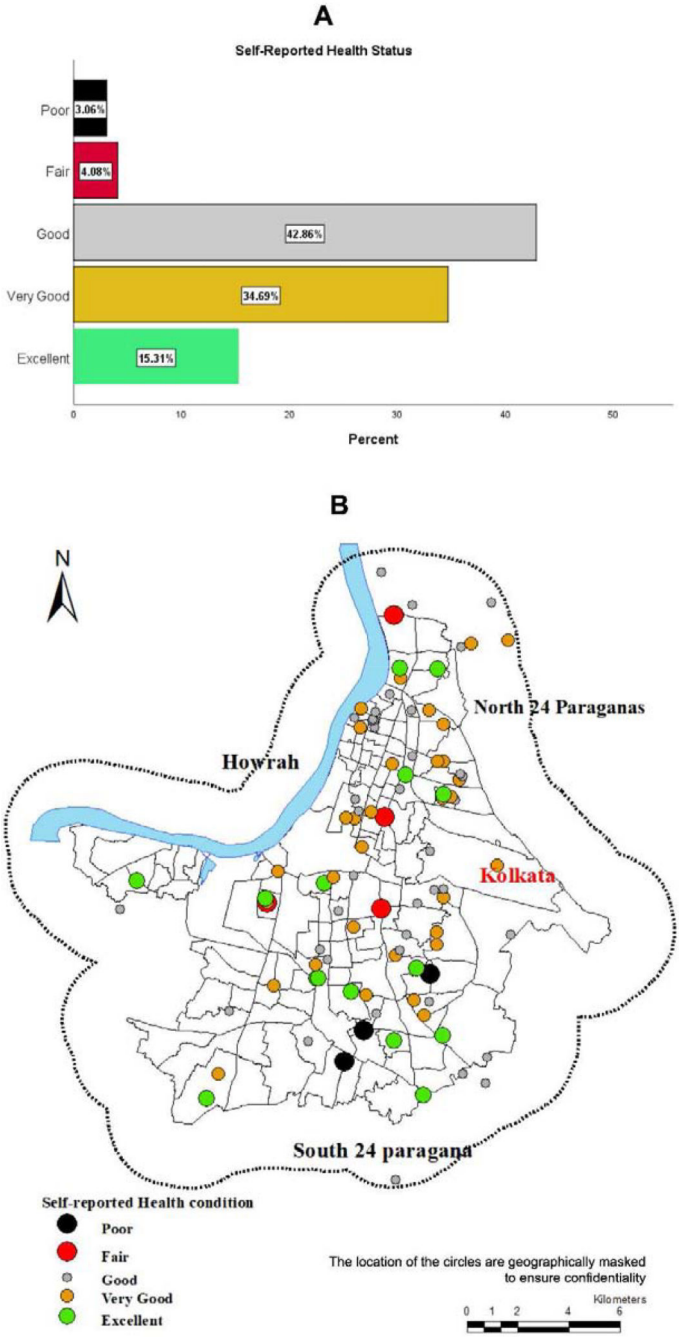

Figure 1:

(A) Percentage of participants with self-reported general health status (N=98) (B) Spatial Distribution general health status among participants in Kolkata

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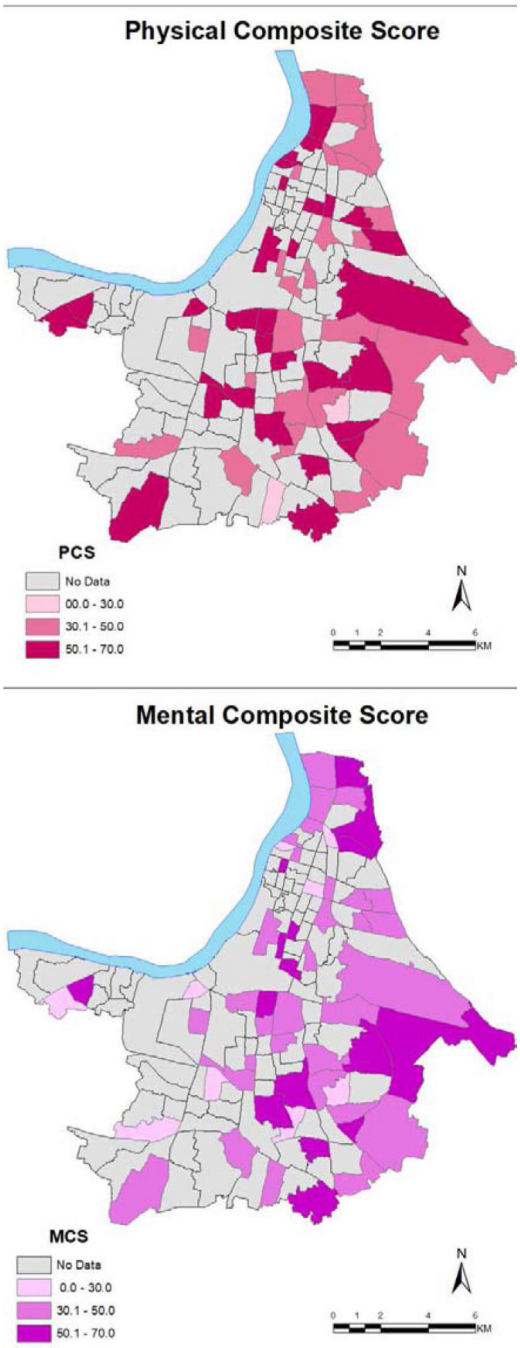

Figure 2:
Spatial Distribution of Physical (PCS) and Mental (MCS) Health Composite Scores among study participants (N = 98)

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Table 1:

Modification of selected Short Form-12 questions for Hijra, Kothi, and Transgender Population

Item	Original Question	Adapted Question
Q1	In general, would you say your health is excellent, very good, good, fair, or poor?	In general, would you say your health is excellent, very good, good, fair, or poor? ***(focus on both of your general and trans-specific health needs)***
Q2	How does your health now limit you in moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?	How does your health now limit you in moderate activities, such as ***such as boarding a crowded train, lifting heavy bucket, brooming or wiping the floor, standing for long time for Cholla***[a]?
Q4	During the past 4 weeks, how much of the time have you had any of the following problems with your work or regular daily activities as a result of your physical health?	During the past 4 weeks, how much of the time have you had any of the following problems with your work or regular daily activities ***(Cholla, Khajra***[b]***, Badhai***[c]***, or any other profession you are involved in)*** as a result of your physical health?
Q8	During the past 4 weeks, how much of the time have you had any of the following problems with your work or other daily activities as a result of any emotional problems, such as feeling depressed or anxious?	During the past 4 weeks, how much of the time have you had any of the following problems with your work or other daily activities as a result of any emotional problems, such as feeling depressed or anxious ***when you faced social stigma, break-up with partner, family non-acceptance)?***
Q12	During the last 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities, like visiting with friends, relatives, etc.?	During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities ***like being part of queer adda***[d]***, visiting friends at lake, relatives etc.)?***

Notes:

[a] = Cholla refers to begging on street, train compartments

[b] = Khajra refers to profession of sex work

[c] = Badhai refers to profession of offering blessings via singing and dancing at childbirth, opening ceremonies of businesses

[d] = Adda is a Bengali word for hangouts

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Table 2:

Demographic characteristics of study participants (N = 98)

Demographic Variables	N (%)
Gender Identity	
Hijra (only)	11 (11.2)
Kothi (only)	40 (40.8)
Transgender (only)	13 (13.3)
More than one identity (HKTD)[a]	34 (34.7)
Educational Qualification	
Non-Literate	10 (10.2)
Secondary School[b]	36 (36.7)
High School[c]	23 (23.5)
College and above	29 (29.6)
Relationship Status	
Single or Never Married or Divorced	29 (29.6)
Married or Partnered	27 (27.6)
Multiple Partners	42 (42.9)
Age (in years)	
18–29	44 (44.9)
30–39	37 (37.8)
>= 40	16 (17.3)
Employment Type	
Unemployed	16 (16.3)
Employed (Self-employed, Sex-work)	47 (47.0)
Traditional Jobs (Badhai, Logon, Cholla)[d]	35 (35.7)
Monthly Income (in INR) [e]	
Very Low (upto 5000)	23 (23.5)
Low (5001 – 7500)	10 (10.2)
Low Medium (7501 – 10,000)	13 (13.3)
Medium (10,001 – 20,000)	35 (35.7)
High Medium (20,001 – 50,000)	14 (14.3)
High (>= 50,001)	3 (3.1)

Notes:

[a]= HKTD – Hijra, Kothi, Transgender, and Dhurani

[b]= Secondary School refers to 10–12 years of education from primary to 10th standard

[c]= High School refers to 12–14 years of education from primary to 12th standard

[d] = Badhai refers to profession of offering blessings via singing and dancing at childbirth, opening ceremonies of businesses; Cholla refers to begging on street, train compartments; Logon refers to the profession of singing and dancing at weddings

[e] = 5000 INR is 75 USD (exchange rate based on 7/5/2020)

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Table 3:

ANOVA analysis between social determinants of health and Physical (PCS) and Mental (MCS) health composite scores

Social Determinants	PCS	MCS
Gender Identity	**Mean (SD)**	**Mean (SD)**
Hijra (only)	47.06 (8.71)	45.70 (12.99)
Kothi (only)	50.73 (9.02)	42.79 (13.68)
Transgender (only)	47.00 (7.99)	47.01 (12.27)
More than one identity (HKTD)[a]	48.18 (10.62)	38.79 (13.08)
ANOVA (p-value)	*0.463*	*0.193*
Educational Qualification		
Non-literatee	46.14 (10.02)	43.23 (13.32)
Secondary School [b]	50.12 (7.96)	43.32 (12.57)
High school [c]	48.81 (9.55)	42.29 (14.04)
College and above	48.74 (10.73)	40.69 (14.26)
ANOVA (p-value)	*0.694*	*0.881*
Relationship Status		
Single or Never married or Divorced	49.65 (9.58)	44.81 (13.17)
Married or Partnered	48.60 (9.02)	44.65 (12.42)
Multiple Partners	48.80 (9.61)	39.03 (13.64)
ANOVA (p-value)	*0.614*	*0.305*
Monthly Income (in INR)[d]		
Very low (Up to 5000)	51.80 (10.29)	37.27 (13.12)
Low (5001 – 7500)	44.57 (9.83)	37.41 (14.72)
Low Medium (7501 – 10,000)	51.28 (7.32)	42.16 (8.49)
Medium (10,001 – 20,000)	49.87 (8.59)	44.24 (13.09)
High Medium (20,001 – 50,000)	45.44 (7.99)	48.75 (13.82)
High (> = 50,001)	38.80 (13.07)	44.54 (20.17)
ANOVA (p-value)	***0.047*** **	*0.118*
Age Group (in years)		
18–29	50.21 (8.39)	44.01 (12.62)
30–39	48.44 (10.79)	38.11 (14.17)
>= 40	47.08 (8.08)	46.95 (11.31)
ANOVA (p-value)	*0.456*	***0.038*** **
Employment Type		

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Social Determinants	PCS	MCS
Unemployed	48.38 (11.58)	38.75 (16.16)
Employed (Self-employed, Sex-work)	49.97 (9.07)	44. 28 (13.09)
Traditional jobs (Badhai, Logon, Cholla)[e]	47.98 (8.74)	41.23 (12.20)
ANOVA (p-value)	*0.614*	*0.305*

Notes:

[a]= HKTD – Hijra, Kothi, Transgender, and Dhurani

[b]= Secondary School refers to 10–12 years of education from primary to 10th standard

[c]= High School refers to 12–14 years of education from primary to 12th standard

[d]= 5000 INR is 75 USD (exchange rate based on 7/5/2020)

[e]= Badhai refers to profession of offering blessings via singing and dancing at childbirth, opening ceremonies of businesses; Cholla refers to begging on street, train compartments; Logon refers to the profession of singing and dancing at weddings

[**] Statistical Significance ($p<0.05$)

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Table 4:

LSD post-hoc test results showing statistically significant differences of Physical (PCS) and Mental (MCS) health composite scores between Monthly Income and Age subcategories

Social Determinants	Correlation P-values	
Monthly Income (INR)[a]	**PCS**	**MCS**
Very Low with Low	**0.037** **	
Very Low with Medium		**0.050** **
Very Low with High Medium	**0.041** **	**0.011** **
Low with High Medium		**0.039** **
High with Very Low	**0.021** **	
High with Low	**0.034** **	
High with Medium	**0.045** **	
Age Group (in years)		
30–39 with 18–29		**0.045** **
30–39 with >= 40		**0.023** **

Notes:

[a]= Very low (Up `to 5000), Low (5001 – 7500), Low Medium (7501 – 10,000), Medium (10,001 – 20,000), High Medium (20,001 – 50,000), High (>= 50,001)

5000 INR is 75 USD (exchange rate based on 7/5/2020)

** Statistical Significance (p<0.05)

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Table 5:

Psychometric analysis of Short Form-12 among Hijra, Kothi, and Transgender Population

Items	Questions	Co-relation Coefficients	
		PCS	MCS
Q1	In general, would you say your health is excellent, very good, good, fair, or poor?	0.594 **	0.309 **
Q2	How does your health now limit you in moderate activities, such as such as boarding a crowded train, lifting heavy bucket, brooming or wiping the floor, standing for long time for Cholla?	**0.701 ** **	0.314 **
Q3	How about climbing several flights of stairs?	**0.608 ** **	0.400 **
Q4	During the past 4 weeks, how much of the time have you had any of the following problems with your work or regular daily activities (Cholla, Khajra, Badhai, or any other profession you are involved in) as a result of your physical health?	**0.622 ** **	0.360 **
Q5	During the past 4 weeks, were you limited in the kind of work or other activities you could do as a result of your physical health?	**0.634 ** **	0.346 **
Q6	During the past 4 weeks, how much did pain interfere with your normal work including both work outside the home (e.g. Logon) and housework)?	**0.725 ** **	0.325 **
Q7	How much of the time during the past four weeks did you have a lot of energy?	0.435 **	**0.535 ** **
Q8	During the past 4 weeks, how much of the time have you had any of the following problems with your work or other daily activities as a result of any emotional problems, such as feeling depressed or anxious when you faced social stigma, break-up with partner, family non-acceptance)?	0.091	**0.777 ** **
Q9	During the last 4 weeks, did you have trouble doing work or other activities as carefully as usual as a result of an emotional problem, such as feeling depressed or anxious?	0.102	**0.748 ** **
Q10	How much of the time during the past 4 weeks have you felt calm and peaceful?	0.099	**0.707 ** **
Q11	How much of the time during the past four weeks have you felt downhearted and blue?	0.208 **	**0.828 ** **
Q12	During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities like being part of queer adda, visiting friends at lake, relatives etc.)?	0.369 **	**0.623 ** **
	Summary Measures		
	Range of Correlation for Convergent Validity	0.60–0.73	0.54 – 0.83
	Discriminant Validity Correlation between PCS and MCS	0.137	
	Cronbach Alpha	0.50	
	Response Rate	100%	

Notes:

** Statistical Significance (p<0.05)